

WE CLAIM:

1. A method of operating an industrial controller equipped with a runtime system in particular for production machines, wherein mechanisms which enable a user to wait in the program flow for any desired condition are provided, the program flow being immediately continued when the condition is satisfied and the program flow being stopped when the condition is not satisfied, until it is established that the condition has been satisfied, the priority of the checking for the condition being increased in comparison with the current task priority while waiting for the condition to be satisfied.
2. The method according to claim 1, wherein once the condition has been satisfied, the following program sequence is processed with high priority up to an explicit end, the old task priority being resumed after the explicit end of the program sequence.
3. The method according to claim 1, wherein process signals and/or internal signals of the controller and/or variables from user programs are used for the formulation of the conditions.
4. The method according to claim 1, wherein the conditions contain logical and/or arithmetic and/or any desired functional combinational operations.
5. The method according to claim 1, wherein a user program for the operation of the controller contains more than one such mechanism.
6. The method according to claim 1, wherein in the operation of the controller, there may be a plurality of user programs which contain these mechanisms.

7. The method as claimed according to claim 1, wherein the respective mechanism is available to a user in a user program as a customary programming-language construct.

8. An industrial controller for carrying out the method according to claim 1, wherein the runtime system of the controller contains a running level model which has a plurality of running levels of different types with different priority, the following running levels being provided:

- a) a group of levels with synchronously clocked levels, comprising at least one system level and at least one user level, it being possible for the levels of this group of levels to have prioritizing with respect to one another;
- b) a user level for system exceptions;
- c) a time-controlled user level;
- d) an event-controlled user level;
- e) a sequential user level; and
- f) a cyclical user level; user levels of the group of levels a) optionally being able to run synchronously in relation to one of the system levels of the group of levels a).

9. The industrial controller according to claim 8, wherein the basic clock of the running level model is derived from an internal timer or from an internal clock of a communication medium or from an external device or from a variable which belongs to the technological process.

10. The industrial controller according to claim 8, wherein the time-controlled user level, the event-controlled user level, the sequential running level, the cyclical background level and the user level for system exceptions are optional.

11. The industrial controller according to claim 8, wherein the synchronous levels are clocked in relation to the basic clock with a step-up and/or step-down ratio and/or in the ratio 1:1.

12. The industrial controller according to claim 8, wherein further prioritizing stratifications are provided within the running levels.

13. The industrial controller according to claim 8, wherein user tasks can optionally be run through during system running-up and/or during system running-down.

14. The industrial controller according to claim 8, wherein user programs which, depending on the type of user level, are programmed in a cycle-oriented or sequential manner can be loaded into the user levels.